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RESULTS OF SCIENTIFIC RESEARCH OF THE ACADEMY OF SCIENCES BELORUSSIAN SSR, 1948

The conditions under which the activity of the Academy of Sciences Belorussian SSR was conducted in 1948 were significantly different from those of 1947, when the buildings of the Academy, destroyed by the German-Fascist invaders had not yet been restored. It was not until 15 January 1948 that the left wing of the main building, encompassing about 6,000 cubic meters, was restored. Up to that time the entire academy was housed in about 650 cubic meters.

In the 1948 plan, high priority was given to the study of power resorces and their utilization in the national economy.

The results of experimental research made by the Peat Institute revealed that mechanical processing of peat while winning cut peat improves volumetric weight and water absorbtion. Technological plans for winning cut peat of higher quality were recommended. Work was conducted on the mechanization of shaping and the technology of drying fine peat, and machines and instruments were designed. The institute investigated the use of a practical mechanism for digging up, turning and packing peat on an industrial scale. Experimental work conducted by the institute gave it a basis for designing a practical industrial machine which was tested during last year. The Power Sector proposed a method of drying very moist peat by sucking part of the flue gases through a layer of peat in a fuel charge. Experiments proved effective, and the method has been applied to high-capacity boilers.

In 1948, the academy conducted a complex field expedition study of the territory of the Poles'ye lowlands. The expedition furnished many new findings in the study of soil, meadow vegetation, and forest plants. As a result of the work of the expedition, the character of many regions of the Poles'ye area was ascertained, especially of those regions having rich industrial reserves of peat. At the same time vast areas of small peat beds which could be of value to agriculture were found.

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The prospects for beet planting on peat soils were improved. This would enable expansion of raw material resources for the sugar and alcohol industry and also improve the feed situation in animal husbandry. It was established that the seed potato grown on peat soils possesses much better qualities in comparison with tubers of the same variety grown on mineral soils. A study of the wire-click beetle indigenous to peat soil, and measures to combat it was made.

The Institute for the Mechanization of Agriculture developed many machine and instrument designs. There was developed, prepared, and tested a single frame marshland plow (PF-60) with a KD-35 tractor, and also a dual frame marshland plow (PF-120) with a STZ-NATI tractor. It was recommended that these plows be produced on a large scale. (The Dneprodzerzhinsk Metallurgical Plant will run off 700 PF-120 plows during 1949.) Furthermore, the institute developed a trench digger for marshy ground. A machine for laying drainpipe in marshes is being developed and prepared. The experimental model was tested and showed great possibilities.

The Institute for the Mechanization of Agriculture also completed the compilation of a general plan for electrification of agriculture in the Republic.

Noticeable progress was made in increasing the yield of agricultural plants and the productivity of animal husbandry.

The Institute of Biology recommended two varieties of wheat-couch grass hybrids, N-22 and Z-2109, and the winter variety 690, which after 2 years of testing in Minsk Oblast, showed a significant improvement over varieties of wheat grown in other regions of the republic.

Work completed by the Institute for the Mechanization of Agriculture in construction of a machine for removing roots of kok-sagyz is significant. The required manpower for this operation is reduced by seven to eight times.

A method of summer planting of the potato, recommended by Academician T. D. Lysenko, was introduced on collective farms by the Institute of Biology, as a method of combating the potato canker (until conversion to a canker-resistant variety). There was developed and tested a canker-resistant potato variety, "White Russian Early," for cultivation in light sandy soils. The Institute of Socialistic Agriculture developed several canker-resistant lines of potatoes. In 1948, the institute also worked out the final details for the single-row and double-row potato-harvesting machines, TEK 1 and TEK-2.

Many problems were worked out by the Department of Technical Sciences.

As a result of studies made by the Institute of Chemistry on reaction kinetics in the decomposition of solids, and in the reduction and polymorphic transformation of these solids, a theory of stage development of embryonic centers of reaction and a theory of polymerization applicable to processes leading to the development of organic glass were formulated. The Laboratory of Physical Chemistry developed an absorption method of purifying penicillin. The kinetics of the swelling of vulcanized rubber in mixed media were studied. The Bobruysk wood combine developed facilities to conduct tests on the use of lupine glues in the plywood industries. In the field of high polymeric compounds, peat waste was studied for the possibility of obtaining products of value to the national economy. The wood chemistry division developed and introduced new technology for tar-turpentine production.

The Physicotechnical Institute developed a series of methods for improving the technology of the metal-processing and machine-building industries which will be introduced in 1949. These include a method of magnetic defectoscopy the electric spark method of treating metal, and a method for improving the stamping of certain parts, particularly in the radio industry.

Valuable work in public health was completed by the Institute of Theoretical Medicine. It developed many methods of treating diseases of the nervous system, as well as new nutritional media which provide a double output of penicillin. The institute developed a method for preparing these media which was introduced at the Minsk Penicillin Plant.

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